

NASA Soil Moisture Active Passive (SMAP) Validation Experiment

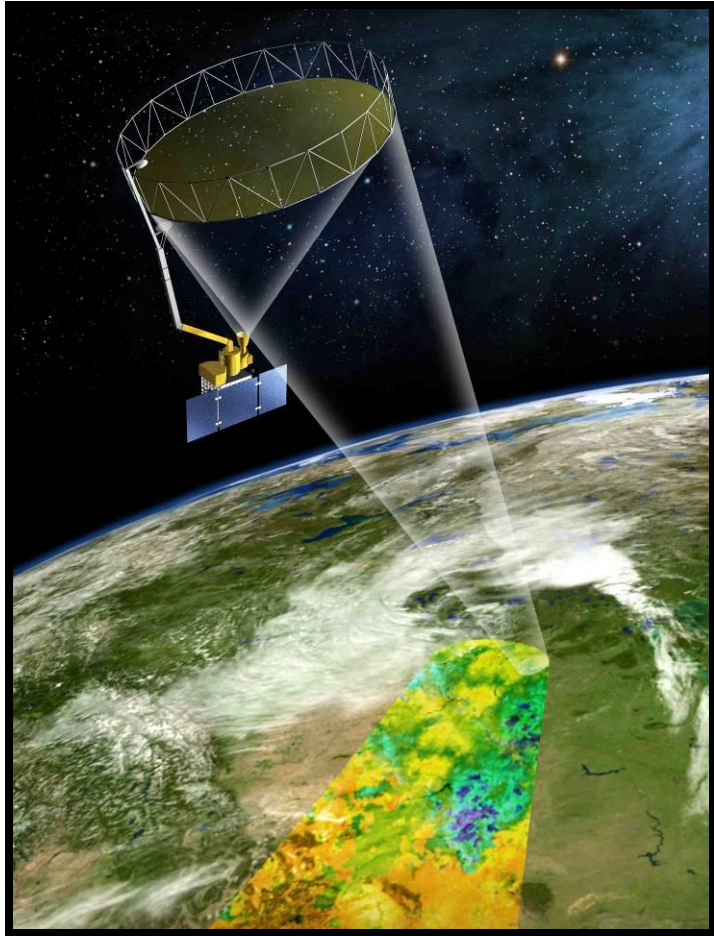


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SMAP GOAL: Deliver high accuracy, high resolution global maps of the Earth's soil moisture and freeze/thaw state.



Dual radiometer (passive)/radar (active) system

- **Soil moisture products**
 - 36-km res. “radiometer-only”
 - 9-km res. “radar+radiometer”
 - 3-km res. “radar-only”

VALIDATION EXPERIMENT

- Large scale multidisciplinary project that involved 50 scientists and students from U.S. agencies and U.S. and international universities.
- **Three aircraft sensor systems were used:**
 - **PALS** - Passive Active L-band System
 - **UAVSAR** - Uninhabited Aerial Vehicle Synthetic Aperture Radar
 - **AirMOSS** - Airborne Microwave Observatory of Subcanopy and Subsurface



WGEW



SRER



Empire Ranch

Soil Moisture Sampling



Surface Roughness



Ground-Based Observations:

- existing network of precip. gages and soil moisture sensors
- 80 temporary soil moisture stations
- gravimetric soil moisture sampling
- bulk density and rock fraction
- spatial soil moisture mapping via COSMOS rover
- mobile scanning radar (for precip.)



Vegetation Sampling



FUTURE OF SMAP



- In early July, the (active) radar system stopped functioning.
- SMAP can no longer produce the 9-km soil moisture product.
- Still producing a high quality 36-km product.
 - USDA-Foreign Agricultural Service (FAS) and National Agricultural Statistics Service (NASS) have plans to integrate SMAP into their Crop Explorer and drought monitoring systems.



THANKS



Validation Team 2015